instances equally good, the botanical ones from the pencil of Mr. Worthington Smith, and they abound on almost every page. Some of them might certainly have been spared, as, for instance, the drawings of Mr. Smee's garden roller and water-pot, which do not appear to differ essentially from similar instruments which might be found in any other garden. But these are small defects, which scarcely depreciate from the value of the work in helping to promote among the inhabitants of our great cities a healthy love of country pursuits, and of the study of Nature herself.

A. W. B.

NOTES

SIR JOHN LUBBOCK, Bart., M.P., F.R.S., has been elected Vice-Chancellor of the University of London in the room of Sir Edward Ryan, who accepted the office for a year only on the death of the late Mr. Grote. We may congratulate ourselves that by this appointment the interests of Science will be well looked after in the future career of the metropolitan University.

DR. H. W. ACLAND, Regius Professor of Medicine, and Dr. G. Rolleston, Linacre Professor of Physiology, have been nominated to represent the University of Oxford on the Committee of Reference for the Medical Examining Board for England.

AT the examination for the degree of D.Sc. just concluded at the University of London, the following gentlemen passed to the satisfaction of the examiners:—In Branch VI.—Electricity, Alexander Muirhead; in Branch IX.—Animal Physiology, Henry Newell Martin, M.B.

THE following despatch from Dr. Kirk respecting Dr. Livingstone, dated Zanzibar, May 2, is published in the *Times of India*: —"Letters have been received from Unyanyembe, and Mr. Stanley is now within a few days of the coast on his return, having with him a large box full of correspondence and papers. Arabs state that Dr. Livingstone has visited Uvira, and found the River Rusiri flowing into the lake; but on this point we must await Dr. Livingstone's own report. He then returned to Ujiji, and was met by Mr. Stanley. Dr. Livingstone has gone to Unyanyembe, where he remains. He is in good health, and intends further explorations south after arrival of additional stores from the coast. Two of the Nassick boys who started some years ago with him are in his company, and he is said to be still using the sextant, and taking observations regularly. All his letters are in Mr. Stanley's care." Another despatch, published in the *Bombay Gazette*, dated Zanzibar, May 3, says:—"Dr. Livingstone has reached Unyanyembe. At Ujiji he was met by Mr. Stanley, who is expected daily at Zanzibar, having in his hands a large case of correspondence that will fully explain Dr. Livingstone's recent travels, embracing the north end of the Tanganyika Lake, and solving the Nile problem. Dr. Livingstone is said to remain still in the Unyamwazi country, and to intend further discoveries to the southward on the receipt from Zanzibar of additional supplies and stores. The Livingstone Relief Expedition is now on the African coast ready with all the necessaries for African travel, and Dr. Livingstone's son forms one of its members."

IT is with regret that we have to record the death, on the 27th ult., of Mr. Charles Hill, at his residence, Cotham Grove, Bristol. The deceased gentleman was in his 78th year, and for a long time had taken much interest in astronomical matters. Mr. Hill was in the possession of an excellent observatory, and his scientific instruments were of the first order.

AT the provincial meeting of the Horticultural Society, held at Birmingham last week, Prof. Thiselton Dyer read an address on the bearing of recent scientific investigations on horticulture.

IN his third and concluding lecture at the College of Surgeons, Prof. Humphry continued his exposition of the morphology and homology of the muscles of the limbs in man. Though arranged in accordance with the movements of the several joints of the limbs upon the flexor and extensor aspects, yet the extensor muscles not unfrequently incline on the sides of the joints, from the extensor to the flexor aspects, and so, irrespective of their nerve-supply, acquire a flexor action. This he believed to be the case with the biceps flexis cruris, which he has shown, from the anatomy of the Cryptobranch in the last number of the *Journal of Anatomy*, to be a derivative from the extensor mass in the thigh. Occasionally, also, as in the case of the *lumbricales*, flexor muscles acquire an extensor action. He spoke of the tendinous intersection in the semitendinosus as being the representative of a similar intersection in the Cryptobranch found at the junction of the caudal with the femoral muscle; and believed it to be present in man for the purpose of dividing the fibres of this muscle, which are of unusual length in consequence of the range of action required of them by the insertion of the tendon at a greater distance from the centre of motion at the knee than the other hamstrings. The ulnar origin of the pronator teres is a representative of the pronator intermedius of reptiles. It is found in the chimpanzee as well as in man, and serves to carry on pronation of the forearm in the flexed position of the elbow in which the remainder of the muscle is relaxed. In like manner the accessorius in the foot serves to maintain the flexion of the toes, while the flexor digitorum is relaxed by the bending of the ankle. This muscle has no representative in the upper limb of man, or in the fore limb of mammals, but it is well represented in the fore limb of Saurians. The great difference in the construction of the two limbs is caused by the pronation and supination in the fore arm and hand, and by the projection of the heel; and the representatives of the muscles, which in the upper limb affect the movements of pronation and of flexion of the fingers, are in the lower limbs, to a considerable extent, concentrated upon the knee. In instituting the comparison between a hand and foot, the Professor observed that it is necessary to eliminate from the consideration those features which ordinarily distinguish the one limb from the other; and this has not been done with sufficient care by some of those who have recently discussed the subject. We should first determine the points in which the hand of man differs from the terminal part of the ordinary fore limb of a mammal; and we may apply the term "hand" to the terminal part of either limb which presents a corresponding modification. This may take place in the hind limb, although the heel may project, and though a peroneus longus muscle, and a short flexor, and a short extensor of the digits may be present. These have been insisted on as the anatomical features of a foot as distinguished from a hand. But in reality they are rather the features of a hind limb as distinguished from a fore limb; and their presence is quite compatible with a modification of the hind limb corresponding with that modification of the fore limb which constitutes the hand of man. Judged in this way the terminal part of the hind limb of a gorilla or a chimpanzee has as much claim to be called a hand as has the terminal part of the fore limb in the same animals. Hence the term "quadrumanous" is, on anatomical ground, fairly applicable to these animals and their allies, as there is no sufficient reason to deny to man the prerogative of special subdivision of labour in the parts of his frame, and, consequently, of high organisation which is significantly implied by the term "bimanous." These lectures are in course of publication in full in the *British Medical Journal*.

THE concluding excursions of the Geologists' Association for the present season will be as follows:—Monday, July 8, excursion to Walton-on-the-Naze; director, Prof. Morris. Saturday, July 13, visit to the International Exhibition; director, Prof.

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Tennant. Monday, July 22, and five following days, excursion to Ludlow and the Longmynds; directors, Prof. Morris, Mr. Robert Lightbody, and Rev. J. D. La Touche. This excursion is intended to afford members an opportunity of studying Silurian and Cambrian Strata, and will be of great value to students of the Palæozoic Rocks. On Monday, after arrival at Ludlow, the party will examine the exposures of the Ludlow group of rocks in the immediate vicinity of the town. On Tuesday the objects of attraction will be the outcrop of the Upper Ludlow on the road to Wigmore, the Aymestry Limestone, and the Lower Ludlow. After passing Elton Hall, examine fine and Fossiliferous Section of the Lower Ludlow, at Evenhays (Vinal Ridge). Proceed then to Burrington (Wenlock Shale), Bank of the Teme (good section of Wenlock Shale), and Church Hill Quarry, Leintwardine, famed for Echinoderm remains. On Wednesday, leave Ludlow for Hayton's Bent, where the Old Red sandstone is exposed, and may be examined with advantage. On Thursday, proceed by Bishop's Castle Railway for the south end of the Longmynds, where the Wenlock Shales will be examined, and the physiography of the district formed by the Llandeilo Rocks observed. Walk back through the Valley of the Onney, observing on the way sections of Silurian Rocks from the Lower Caradoc to the Wenlock. On Friday, proceed by rail to Lydham Heath, thence to Shelve (Lower Llandeilo). Walk over the Stiperstone and Longmynd Ranges to Church Stretton, and examine junction of Cambrian and Silurians. On Saturday, from Craven Arms walk to Norton Camp, observing by the way Wenlock and Ludlow Sections, and at Norton inspect a good exposure of the "Bone Bed." Should time permit, proceed to Onibury, and inspect junction of Silurians and Devonians, and a fossiliferous section of Lower Ludlow Shale.

A NEW work on Electrostatics by Sir William Thomson will be published by Messrs. Macmillan and Co. early in August. It will consist chiefly of articles which originally appeared at different times during the last thirty years, in the *Cambridge Mathematical Journal*, the *Cambridge and Dublin Mathematical Journal*, Liouville's *Journal de Mathématiques*, the *Philosophical Magazine*, Nichol's Cyclopædia, the Reports of the British Association, the Proceedings of the Royal Societies of London and Edinburgh, of the Royal Institution of Great Britain, and of the Philosophical Societies of Manchester and Glasgow; and which will now be first collected and published together. The rest, constituting about a quarter of the whole, will be printed from manuscript, which, except a small part about twenty years old, entitled "Electromagnets," has been written for the present publication, to fill up roughly gaps in the collection.

THE two modes of photographic printing known as the Albert and Woodbury processes have both been employed by Prof. Agassiz in the illustration of his forthcoming "Revision of the Echini." Prof. Agassiz has kindly permitted us to see specimens of both modes of illustration. They are simply exquisite, portraying every marking on the surface of the shells with the accuracy of nature printing, and with the beauty of a lithograph. The practical working of these new modes of photographic printing must speedily work a complete revolution in the illustration of works on Natural History.

A VALUABLE report, prepared by Mr. R. D. Cutts, of the United States Coast Survey, upon commerce in the products of the sea, has just been published by the Senate, and is considered a valuable contribution to the statistics of the fisheries of America and of the rest of the world. In this the different marketable products are described in detail, and the relative rank which they occupy in commerce indicated. In addition to this, there is given the area, population, most important ports, and commercial tonnage of the principal nations of the world; the imports and exports of the products of the sea; showing the capacity of the markets and the countries supplied; and also the catch, consumption, and balance of trade, from official statistics. This Report was prepared in 1869 by request of the Secretary of State, and transmitted in February of that year, but the order to print was not made till receetly.

THE Report of the Government Cinchona Plantations at Ootacamund in India for 1870-71 states that the growth of the plants has been very satisfactory. The older shrubs have grown into trees 22ft. to 23ft. high, and 18in. to 21in. in girth. Of the *Cinchona succirubra* the finest samples reach a height of 30ft., with a girth of 3ft. Among the new species of plants lately introduced is the Pitayo bark, which appears hardy and well suited to the climate. During the year 51,353lbs. of fresh bark were supplied to Mr. Broughton, the Government quinologist, for the manufacture of amorphous quinine. From 1,000 eight-year-old plants of the *Cinchona succirubra*, as much as 2,560lbs. may be expected to be extracted this year. This average of more than 2½lbs. to each tree will yield at the present rate of 2*s*. 8*d*. to 3*s*. per lb., a clear profit of at least 2*s*. per lb.

PROF. LEIDY, at a meeting of the Philadelphia Academy of Seciences, on February 6, exhibited specimens of corundum from Macon County, North Carolina, which, he said, were especially interesting, as they consisted of fragments of large crystals of gray corundum, containing in the interior dark blue sapphire, and coated on the exterior with bright red ruby. One pyramid of a large crystal from the same locality recently brought to that city weighs 300 pounds.

AT the meeting of the American Fish-Culturists' Association, held at Albany, it was voted to present to Congress a memorial for aid from Government in stocking the rivers of the United States with useful food fishes. Mr. George Page Shepherd, of New Jersey, was appointed to present the memorial, and had an opportunity not long since of expressing his views before the House Committee on Appropriations.

ACCORDING to Dr. Uhler, of Baltimore, the European cabbage butterfly (*Pontia Brassicæ*), the pest of the agriculturist, has reached Baltimore in its invasion of the United States. It has been known for some years more to the eastward, and has been slowly but surely creeping along, until it bids fair to involve the whole country in its ravages.

WE reprint the following interesting note from *Harper's Weekly*:—"As is well known, grouse, pheasants, ptarmigans, and some other gallinacea have a red patch or wattle above the eye, this being so conspicuous in some species as to resemble a piece of red flannel. This has been lately subjected to a careful analysis by Dr. Wurm, who ascertains that it contains a new organic colouring material, which he calls *Tetronerythrin*, or grouse red. It seems to lie in the deeper strata of the epidermis, like the colouring matter of the human skin, and to be partly dissolved in the deep layers of the cells, and partly to common with the colouring matter of the blood. The fact has been well known to hunters that if a white cloth be rubbed over this red process the colour will come off."

THE *New York Journal of Commerce* gives circulation to a story of an extraordinary fall of fish-bones (?) in Louisiana, covering the ground over a considerable area.

LATE Chilian papers announce the discovery of important mines of coal in that country, especially along the Gulf of Aranco, near the mouth of the Carampangue River. According to an official report, one of these veins is five feet thick, and is estimated to contain four million tons of coal.

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